

point definition, §68.3(b)(3). The customer or premises owner may not access carrier wiring and facilities on the carrier's side of the demarcation point. Customers may not access the telephone company-installed protector. All plugs and jacks used in connection with inside wiring shall conform to subpart F of this part.

(c) Material requirements. (1) For new installations and modifications to existing installations, copper conductors shall be, at a minimum, solid, 24 gauge or larger, twisted pairs that comply with the electrical specifications for Category 3, as defined in the ANSI EIA/TIA Building Wiring Standards.

(2) Conductors shall have insulation with a 1500 Volt rms minimum breakdown rating. This rating shall be established by covering the jacket or sheath with at least 15 cm (6 inches) (measured linearly on the cable) of conductive foil, and establishing a potential difference between the foil and all of the individual conductors connected together, such potential difference gradually increased over a 30 second time period to 1500 Volts rms, 60 Hertz, then applied continuously for one minute. At no time during this 90 second time interval shall the current between these points exceed 10 milliamperes peak.

(3) All wire and connectors meeting the requirements set forth in paragraphs (c)(1) and (c)(2) shall be marked, in a manner visible to the consumer, with the symbol "CAT 3" or a symbol consisting of a "C" with a "3" contained within the "C" character, at intervals not to exceed one foot (12 inches) along the length of the wire.

(d) *Attestation.* Manufacturers (or distributors or retailers, whichever name appears on the packaging) of non-system telephone premises wire shall attest in a letter to the Commission that the wire conforms with part 68, FCC Rules.

[49 FR 21734, May 23, 1984, as amended at 50 FR 29392, July 19, 1985; 50 FR 47548, Nov. 19, 1985; 51 FR 944, Jan. 9, 1986; 55 FR 28630, July 12, 1990; 58 FR 44907, Aug. 25, 1993; 62 FR 36464, July 8, 1997; 65 FR 4140, Jan. 26, 2000]

§ 68.214 Changes in registered equipment and circuitry.

Changes in registered terminal equipment or registered protective circuitry shall be made as follows:

(a) No change in registered terminal equipment or registered protective circuitry that would result in any change in the information furnished the Commission pursuant to §68.200 may be made, except after grant of a new application made on FCC Form 730.

(b) Changes which do not result in any change in the information furnished the Commission pursuant to §68.200 may be made without express Commission approval. *Provided*, That prior written notification is given the Commission on FCC Form 730.

(c) Where equipment is registered by virtue of incorporation of registered protective circuitry therein, no notification need be given of changes to other than the protective circuitry, its mechanical and electrical connections to the equipment.

(d) Changes in registered terminal equipment or registered protective circuitry made pursuant to paragraphs (b) and (c) of this section may be made only by the grantee, or an authorized agent thereof, and the grantee will remain responsible for the performance of such changes.

(e) Operations associated with installing, connecting, reconfiguring or removing (other than final removal) premises wiring to registered terminal equipment or registered protective circuitry are changes in this equipment or circuitry within the meaning of this Section, unless:

(1) The premises wiring involved is "fully-protected" premises wiring, or

(2) All such operations are performed in accordance with §68.215.

[42 FR 32244, June 24, 1977, as amended at 43 FR 16499, April 19, 1978]

§ 68.215 Installation of other than "fully protected" system premises wiring that serves more than four subscriber access lines.

(a) *Types of wiring authorized*—(1) *Between equipment entities.* Unprotected

premises wiring, and protected premises wiring requiring acceptance testing for imbalance, may be used to connect separately-housed equipment entities to one another.

(2) *Between an equipment entity and the network interface(s).* Fully-protected premises wiring shall be used to connect equipment entities to the telephone network interface unless the local telephone company is unwilling or unable to locate the interface within 7.6 meters (25 feet) of the equipment entity on reasonable request. In any such case, other than fully-protected premises wiring may be used if otherwise in accordance with these rules.

(3) *Hardware protection as part of the telephone company's facilities.* In any case where the carrier chooses to provide (and the customer chooses to accept, except as authorized under paragraph (g) of this section), hardware protection on the network side of the interface(s), the presence of such hardware protection will affect the classification of premises wiring for the purposes of § 68.215, as appropriate.

(b) *Installation personnel.* Operations associated with the installation, connection, reconfiguration and removal (other than final removal of the entire premises communications system) of other than fully-protected premises wiring shall be performed under the supervision and control of a supervisor, as defined in paragraph (c) of this section. The supervisor and installer may be the same person.

(c) *Supervision.* Operations by installation personnel shall be performed under the responsible supervision and control of a person who:

(1) Has had at least six months of on-the-job experience in the installation of telephone terminal equipment or of wiring used with such equipment;

(2) Has been trained by the registrant of the equipment to which the wiring is to be connected in the proper performance of any operations by installation personnel which could affect that equipment's continued compliance with these rules;

(3) Has received written authority from the registrant to assure that the operations by installation personnel will be performed in such a manner as to comply with these rules.

(4) Or, in lieu of paragraphs (c) (1) through (3) of this section, is a licensed professional engineer in the jurisdiction in which the installation is performed.

(d) *Workmanship and material requirements*—(1) *General.* Wiring shall be installed so as to assure that there is adequate insulation of telephone wiring from commercial power wiring and grounded surfaces. Wiring is required to be sheathed in an insulating jacket in addition to the insulation enclosing individual conductors (see below) unless located in an equipment enclosure or in an equipment room with restricted access; it shall be assured that this physical and electrical protection is not damaged or abraded during placement of the wiring. Any intentional removal of wiring insulation (or a sheath) for connections or splices shall be accomplished by removing the *minimum* amount of insulation necessary to make the connection or splice, and insulation equivalent to that provided by the wire and its sheath shall be suitably restored, either by placement of the splices or connections in an appropriate enclosure, or equipment rooms with restricted access, or by using adequately-insulated connectors or splicing means.

(2) *Wire.* Insulated conductors shall have a jacket or sheath with a 1500 volt rms minimum breakdown rating, except when located in an equipment enclosure or an equipment room with restricted access. This rating shall be established by covering the jacket or sheath with at least 15 cm (6 in) (measured linearly on the cable) of conductive foil, and establishing a potential difference between the foil and all of the individual conductors connected together, such potential difference gradually increased over a 30 second time period to 1500 volts rms, 60 Hertz, then applied continuously for one minute. At no time during this 90 second time interval shall the current between these points exceed 10 milliamperes peak.

NOTE: This requirement is patterned after § 68.304.

(3) *Places where the jacket or sheath has been removed.* Any point where the jacket or sheath has been removed (or

is not required) shall be accessible for inspection. If such points are concealed, they shall be accessible without disturbing permanent building finish (e.g. by removing a cover).

(4) *Building and electrical codes.* All building and electrical codes applicable in the jurisdiction to telephone wiring shall be complied with. If there are no such codes applicable to telephone wiring, Article 800 of the 1978 National Electrical Code, entitled Communications Systems, and other sections of that Code incorporated therein by reference shall be complied with.

(5) *Limitations on electrical signals.* Only signal sources which emanate from the local telephone company central office, or which are generated in equipment at the customer's premises and are "non-hazardous voltage sources" (see § 68.306(b)(4)) may be routed in premises telephone wiring, except for voltages for network control signaling and supervision which are consistent with standards employed by the local telephone company. Current on individual wiring conductors shall be limited to values which do not cause an excessive temperature rise, with due regard to insulation materials and ambient temperatures. The following table assumes a 45° C temperature rise for wire sizes 22 AWG or larger, and a 40° C rise for wire sizes smaller than 22 AWG, for poly-vinyl chloride insulating materials, and should be regarded as establishing *maximum* values to be derated accordingly in specific installations where ambient temperatures are in excess of 25° C:

MAXIMUM CONTINUOUS CURRENT CAPACITY OF
PVC INSULATED COPPER WIRE, CONFINED

Wire size, AWG	Circular mils	Maximum current, amperes
32	63.2	0.32
30	100.5	0.52
28	159.8	0.83
26	254.1	1.3
24	404.0	2.1
22	642.4	5.0
20	1022	7.5
18	1624	10

NOTE: The total current in all conductors of multiple conductor cables may not exceed 20% of the sum of the individual ratings of all such conductors.

(6) *Physical protection.* In addition to the general requirements that wiring insulation be adequate and not dam-

aged during placement of the wiring, wiring shall be protected from adverse effects of weather and the environment in which it is used. Where wiring is attached to building finish surfaces (surface wiring), it shall be suitably supported by means which do not affect the integrity of the wiring insulation.

(e) *Documentation requirements.* A notarized affidavit and one copy thereof shall be prepared by the installation supervisor in advance of each operation associated with the installation, connection, reconfiguration and removal of other than fully-protected premises wiring (except when accomplished functionally using a cross-connect panel), except when involved with removal of the entire premises communications system using such wiring. This affidavit and its copy shall contain the following information:

(1) The responsible supervisor's full name, business address and business telephone number.

(2) The name of the registrant(s) (or manufacturer(s), if grandfathered equipment is involved) of any equipment to be used electrically between the wiring and the telephone network interface, which does not contain inherent protection against hazardous voltages and longitudinal imbalance.

(3) A statement as to whether the supervisor complies with § 68.215(c). Training and authority under § 68.215(c)(2)-(3) is required from the registrant (or manufacturer, if grandfathered equipment is involved) of the first piece of equipment electrically connected to the telephone network interface, other than passive equipments such as extensions, cross-connect panels, or adapters. In general, this would be the registrant (or manufacturer) of a system's common equipment.

(4) The date(s) when placement and connection of the wiring will take place.

(5) The business affiliation of the installation personnel.

(6) Identification of specific national and local codes which will be adhered to.

(7) The manufacturer(s); a brief description of the wire which will be used (model number or type); its conformance with recognized standards for wire

if any (e.g., Underwriters Laboratories listing, Rural Electrification Administration listing, “KS-” specification, etc.); and a general description of the attachment of the wiring to the structure (e.g., run in conduit or ducts exclusively devoted to telephone wiring, “fished” through walls, surface attachment, etc.).

(8) The date when acceptance testing for imbalance will take place.

(9) The supervisor’s signature.

The notarized original shall be submitted to the local telephone company at least ten calendar days in advance of the placement and connection of the wiring. This time period may be changed by agreement of the telephone company and the supervisor. The copy shall be maintained at the premises, available for inspection, so long as the wiring is used for telephone service.

(f) *Acceptance testing for imbalance.* Each telephone network interface that is connected directly or indirectly to other than fully-protected premises wiring shall be subjected to the acceptance test procedures specified in this section whenever an operation associated with the installation, connection, reconfiguration or removal of this wiring (other than final removal) has been performed.

(1) *Test procedure for two-way or outgoing lines or loops.* A telephone instrument may be associated directly or indirectly with the line or loop to perform this test if one is not ordinarily available to it:

(i) Lift the handset of the telephone instrument to create the off-hook state on the line or loop under test.

(ii) Listen for noise. Confirm that there is neither audible hum nor excessive noise.

(iii) Listen for dial tone. Confirm that dial tone is present.

(iv) Break dial tone by dialing a digit. Confirm that dial tone is broken as a result of dialing.

(v) With dial tone broken, listen for audible hum or excessive noise. Confirm that there is neither audible hum nor excessive noise.

(2) *Test procedure for incoming-only (non-originating) lines or loops.* A telephone instrument may be associated directly or indirectly with the line or

loop to perform this test if one is not ordinarily available to it:

(i) Terminate the line or loop under test in a telephone instrument in the on-hook state.

(ii) Dial the number of the line or loop under test from another station, blocking as necessary other lines or loops to cause the line or loop under test to be reached.

(iii) On receipt of ringing on the line or loop under test, lift the handset of the telephone instrument to create the off-hook state on that line or loop.

(iv) Listen for audible hum or excessive noise. Confirm that there is neither audible hum nor excessive noise.

(3) *Failure of acceptance test procedures.* Absence of dial tone before dialing, inability to break dial tone, or presence of audible hum or excessive noise (or any combination of these conditions) during test of two-way or outgoing lines or loops indicates failure. Inability to receive ringing, inability to break ringing by going off-hook, or presence of audible hum or excessive noise (or any combination of these conditions) during test of incoming-only lines or loops indicates failure. Upon any such failure, the failing equipment or portion of the premises communications system shall be disconnected from the network interface, and may not be reconnected until the cause of the failure has been isolated or removed. Any previously tested lines or loops shall be retested if they were in any way involved in the isolation and removal of the cause of the failure.

(4) *Monitoring or participation in acceptance testing by the local telephone company.* The local telephone company may monitor or participate in the acceptance testing required under this section, in accordance with § 68.215(g) of this part, from its central office test desk or otherwise.

(g) *Extraordinary procedures.* The local telephone company is hereby authorized to limit the subscriber’s right of connecting FCC-registered terminal equipment or protective circuitry with other than fully-protected premises wiring, but solely in accordance with this subsection and § 68.108 of these rules.

(1) *Conditions which may invoke these procedures.* The extraordinary procedures authorized herein may only be invoked where one or more of the following conditions is present:

(i) Information provided in the supervisor's affidavit gives reason to believe that a violation of part 68 of the FCC's rules is likely.

(ii) A failure has occurred during acceptance testing for imbalance.

(iii) Harm has occurred, and there is reason to believe that this harm was a result of wiring operations performed under this section.

The extraordinary procedures authorized in the following sub-sections shall not be used so as to discriminate between installations by local telephone company personnel and installations by others. In general, this would require that any charges for these procedures be levied in accordance with, or analogous to, the "maintenance of service" tariff provisions: If the installation proves satisfactory, no charge should be levied.

(2) *Monitoring or participation in acceptance testing for imbalance.* Notwithstanding the previous sub-section, the local telephone company may monitor or participate in acceptance testing for imbalance at the time of the initial installation of wiring in the absence of the conditions listed therein; at any other time, one or more of the listed conditions shall be present. Such monitoring or participation in acceptance testing should be performed from the central office test desk where possible to minimize costs.

(3) *Inspection.* Subject to paragraph (g)(1) of this section, the local telephone company may inspect wiring installed pursuant to this section, and all of the splicing and connection points required to be accessible by §68.215(d)(3) to determine compliance with this section. The user or installation supervisor shall either authorize the telephone company to render the splicing and inspection points visible (e.g. by removing covers), or perform this action prior to the inspection. To minimize disruption of the premises communications system, the right of inspecting is limited as follows:

(i) During initial installation of wiring:

The telephone company may require withdrawal of up to 5 percent (measured linearly) of wiring run concealed in ducts, conduit or wall spaces, to determine conformance of the wiring to the information furnished in the affidavit.

(ii) After failure of acceptance testing or after harm has resulted from installed wiring:

The telephone company may require withdrawal of all wiring run concealed in ducts, conduit or wall spaces which reasonably could have caused the failure of harm, to determine conformance of the wiring to the information furnished in the affidavit.

In the course of any such inspection, the telephone company shall have the right to inspect documentation required to be maintained at the premises under §68.215(e).

(4) *Requiring the use of protective apparatus.* In the event that any of the conditions listed in paragraph (g)(1) of this section, arises, and is not permanently remedied within a reasonable time period, the telephone company may require the use of protective apparatus which either protects solely against hazardous voltages, or which protects both against hazardous voltages and imbalance. Such apparatus may be furnished either by the telephone company or by the customer. This right is in addition to the telephone company's rights under §68.108.

(5) *Notice of the right to bring a complaint.* In any case where the telephone company invokes the extraordinary procedures of §68.215(g), it shall afford the customer the opportunity to correct the situation which gave rise to invoking these procedures, and inform the customer of the right to bring a complaint to the Commission pursuant to the procedures set forth in subpart E of this part. On complaint, the Commission reserves the right to perform any of the inspections authorized under this section, and to require the performance of acceptance tests.

(h) *Limitations on the foregoing if protected wiring requiring acceptance testing is used.* If protected wiring is used which required acceptance testing, the requirements in the foregoing paragraphs of §68.215 are hereby limited, as follows:

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(1) *Supervision.* Section 68.215(c)(2)–(3) are hereby waived. The supervisor is only required to have had at least six months of on-the-job experience in the installation of telephone terminal equipment or of wiring used with such equipment.

(2) *Extraordinary procedures.* Section 68.215(g)(3) is hereby limited to allow for inspection of exposed wiring and connection and splicing points, but not for requiring the withdrawal of wiring from wiring run concealed in ducts, conduit or wall spaces unless actual harm has occurred, or a failure of acceptance testing has not been corrected within a reasonable time. In addition, § 68.215(g)(4) is hereby waived.

[43 FR 16499, Apr. 19, 1978, as amended at 44 FR 7958, Feb. 8, 1979; 47 FR 37896, Aug. 27, 1982; 49 FR 21735, May 23, 1984; 58 FR 44907, Aug. 25, 1993]

§ 68.216 Repair of registered terminal equipment and registered protective circuitry.

Repair of registered terminal equipment and registered protective circuitry shall be accomplished only by the manufacturer or assembler thereof or by their authorized agent; however, routine repairs may be performed by a user, in accordance with the instruction manual if the applicant certifies that such routine repairs will not result in noncompliance with the rules and regulations in subpart D of this part.

§ 68.218 Responsibility of grantee of equipment registration.

(a) In applying for a grant of an equipment registration, the grantee warrants that each unit of equipment marketed under such grant will comply with all the applicable rules and regulations in subpart D of this part.

(b) The grantee or its agent shall provide the user of the registered equipment the following:

(1) Instructions concerning installation, operational and repair procedures, where applicable.

(2) Instructions that registered terminal equipment or protective circuitry may not be used with party lines or coin lines.

(3) Instructions that when trouble is experienced the customer shall dis-

connect the registered equipment from the telephone line to determine if the registered equipment is malfunctioning and that if the registered equipment is malfunctioning, the use of such equipment shall be discontinued until the problem has been corrected.

(4) Instructions that the user must give notice to the telephone company in accordance with the requirements of § 68.106, and instructions specifying the Universal Service Order Code(s), other than RJ11 (see § 68.502), of means of connection of the equipment which may be required to be ordered from the telephone company if not already installed.

(5) For a telephone which is not hearing aid-compatible, as defined in § 68.316 of these rules:

(i) Notice that FCC rules prohibit the use of that handset in certain locations; and

(ii) A list of such locations (see § 68.112).

(6) For registered devices used in connection with 1.544 Mbps digital services, instructions that the user must notify the telephone company prior to disconnection of such registered devices.

A telephone company which provides and installs the registered equipment need only provide the user with the information required in paragraphs (b)(1), (3) and (5) of this section.

(c) When registration is revoked for any item of equipment, the grantee is responsible to take all reasonable steps to ensure that purchasers and users of such equipment are notified of such revocation and are notified to discontinue use of such equipment.

(d) The grantee or its agent shall assure that any registered equipment or circuitry which is offered to a user shall be equipped with standard means of connection to the telephone network specified in subpart F of this part.

[41 FR 8049, Feb. 24, 1976, as amended at 42 FR 32244, June 24, 1977; 49 FR 1363, Jan. 11, 1984; 50 FR 48209, Nov. 22, 1985]

§ 68.220 Cross reference.

Applications for registration of terminal equipment or protective circuitry shall, in addition to the requirements of this subpart, comply with the